Chapter 6

DEMAND MANAGEMENT MEASURES

The Urban Water Management Planning Act (UWMPA) identifies fourteen Demand Management Measures (DMMs) for urban water suppliers to address. These measures are derived from the original BMPs established in the UWMPA and the 1991 Memorandum of Understanding.

Law

10631 (f) (1) and (2). (Describe and provide a schedule of implementation for) each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following: (A) water survey programs for single-family residential and multifamily residential customers; (B) residential plumbing retrofit; (C) system water audits, leak detection, and repair; (D) metering with commodity rates for all new connections and retrofit of existing connections; (E) large landscape conservation programs and incentives; (F) high-efficiency washing machine rebate programs; (G) public information programs; (H) school education programs; (I) conservation programs for commercial, industrial, and institutional accounts; (J) wholesale agency programs; (K) conservation pricing; (L) water conservation coordinator; (M) water waste prohibition; (N) residential ultra-low flush toilet replacement programs.

10631 (f) (3). (Provide) a description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

10631 (f) (4). (Provide) an estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

10631 (g). (Provide) an evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following: (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors; (2) Include a cost-benefit analysis, identifying total benefits and total costs; (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost; (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

In 1991, a Memorandum of Understanding (MOU) regarding Urban Water Conservation in California formed the California Urban Water Conservation Council (CUWCC). The City of Hanford (City) is not currently a signatory of the MOU and is therefore not a member of CUWCC.

However, the City realizes the importance of the BMPs to ensure a reliable future water supply. The City is committed to implementing water conservation and water recycling programs to maximize sustainability in meeting future water needs for its customers. Due to the continued effective water conservation measures implemented by the City, the 2010 per-capita water use has dropped to roughly 200 gallons per capita per day (gpcd), from 220 gpcd in 1995 and 289 gpcd in 1975. (See Table 6.1.)

Table 6.1 Demand Management Measures 2005 Urban Water Management Plan City of Hanford

Demand Management Measure	Implemented	Planning to Implement	Cost Benefit Analysis Completed	Not Applicable
DMM 1 - Water Survey Programs		☑		
DMM 2 - Residential Plumbing Retrofit	☑			
DMM 3 - Water System Audits			☑	
DMM 4 - Metering with Commodity Rates	☑			
DMM 5 - Landscape Irrigation Programs	☑			
DMM 6 - Washing Machine Rebate Program			☑	
DMM 7 - Public Information	☑			
DMM 8 - School Education	☑			
DMM 9 - Commercial, Industrial & Institutional Programs			☑	
DMM 10 - Wholesale Agency Programs				☑
DMM 11 - Conservation Pricing	☑			
DMM 12 - Water Conservation Coordinator	☑			
DMM 13 - Water Waste Prohibition	☑			
DMM 14 - Ultra Low Flush Toilet Replacement			☑	

The California Department of Water Resources (DWR) has assigned an enhanced terminology to the BMPs. Accordingly, this chapter will refer to them as DMMs.

6.1 DMM 1 - WATER SURVEY PROGRAMS FOR SINGLE-FAMILY RESIDENTIAL AND MULTIFAMILY RESIDENTIAL CUSTOMERS

This program consists of offering water audits to residential customers. Audit components include reviewing water usage history with the customer, identifying leaks inside and outside, and recommending improvements.

The City is planning to implement a program that will offer free water surveys to its residential customers, with the goal of reducing water waste and increasing awareness to residential customers of the importance of water use efficiency. To begin the program, City staff indicates that two existing staff members will be made available to perform surveys on Friday afternoons, either every week or every other week. According to other agencies, it is common for these surveys to take approximately 1.5 hours including travel time. It is assumed that three of these surveys can be completed in one afternoon (total of 4.5 hours). If the survey staff were available every Friday for two years, the City could complete 312 surveys, or just over two percent of all metered and unmetered single-family residential (SFR) customers. Continuing the same schedule, the City could reach about 11 percent of SFR customers over ten years.

This appears to be a reasonable goal for the City to start the program. After the first two years, the City could consider adding staff time to complete additional surveys, perhaps targeting multi-family residential (MFR) customers as well. In addition, the program can be evaluated for effectiveness and compared to other DMMs after the initial two year stage is completed.

A technical memorandum has been prepared as part of the development of this Urban Water Management Plan (UWMP) with detailed information regarding the City's planned residential water survey program. This Residential Water Survey Program Technical Memorandum is provided in Appendix K for reference.

6.1.1 Implementation Status

The current implementation status of this DMM is planned.

6.1.2 Steps Necessary to Implement

Some of the required steps for the City to implement this DMM include:

- Establish a survey protocol;
- Determine the type and method of storing data associated with each water survey for later evaluation;
- Train City Staff on how to perform the survey;

- Inform residential users of the availability of the survey (through bill inserts, the City's website, and other means);
- Dedicate City Staff time and resources for the implementation of the surveys;
- Store and analyze water savings and cost data associated with the program.

More detailed information on specific steps to be taken by the City in order to implement this DMM is provided in Appendix K.

6.1.3 Methods to Evaluate Program Effectiveness

Data collected before, during, and after the residential water surveys can be used to evaluate the effectiveness of the program. The Residential Water Survey Program Technical Memorandum (Appendix K) recommends that a cost-benefit analysis be performed every two years to ensure that the program is cost-effective for the City. The most critical data to evaluate the program is the cost of performing the surveys and the resulting reduction in water use. The pre- and post-survey water consumption of customers that received surveys should be compared to customers that did not receive surveys to account for any system-wide trends. Given the results of the evaluation, the City can opt to continue with the program, evaluate areas of potential improvement, or replace the program with a more cost-effective DMM.

6.1.4 Conservation Savings

As detailed in Appendix K, it has been estimated that the implementation of this DMM could result in a total water savings on approximately 50,232 gallons per day (gpd).

6.2 DMM 2 - RESIDENTIAL PLUMBING RETROFIT

This program consists of installing physical devices to reduce the amount of water used or to limit the amount of water, which can be served to the customer. In accordance with State Law, low flow fixtures have been required on all new construction since 1978. In addition, State legislation enacted in 1990 requires all new buildings after January 1, 1992 to install Ultra-Low Flush Toilets (ULFT).

Several studies suggest that savings resulting from miscellaneous interior retrofit fixtures can range between 25 and 65 gpd per housing unit. The studies also suggest that installation of retrofit fixtures in older single-family homes tend to produce more savings, while newer multi-family homes tend to produce fewer saving per housing unit.

Since 1986, the City has been displaying an informational booth at the Kings District Fair and at the Annual Street Party. Water saver kits have been distributed that contain low-flow plumbing fixtures, toilet dams, dye tablets, and water-saving tips. These kits are not distributed as part of a targeted marketing strategy. Rather, they are distributed to those

customers who are interested in conserving water. Additionally, as part of the planned implementation of DMM 1, the City plans to offer the water saving kits as part of the residential water surveys.

The City does not have an enforceable ordinance in effect requiring replacement of high-flow showerheads and other water use fixtures with low-flow fixtures; therefore, the City does not have the legal authority to require that these fixtures be installed.

6.2.1 Implementation Status

The City has implemented this DMM.

6.2.2 Steps Necessary to Implement

This section is not applicable for DMMs that have been implemented.

6.2.3 Methods to Evaluate Program Effectiveness

The City has not established a method to evaluate the effectiveness of this DMM. The reason for this is that the historical reduction in water use associated with this DMM is not readily quantifiable.

6.2.4 Conservation Savings

The City has not tracked reductions in water use related to this DMM. The City could track water savings associated with this DMM in the future in conjunction with DMM 1, as these two DMMs are somewhat related. This would require the City to track the names of customers receiving water saving kits in order to establish pre and post installation water use for customers with water meters installed.

6.3 DMM 3 - SYSTEM WATER AUDITS, LEAK DETECTION, AND REPAIR

A water audit is a process of accounting for water use throughout a water system in order to quantify the unaccounted-for water. Unaccounted-for water is the difference between metered production and metered consumption on a system-wide basis. A leak detection program typically consists of both visual inspection as well as audible inspection. Visual inspection includes the inspection of distribution system appurtenances (e.g., fire hydrants, valves, meters, etc.) to identify obvious signs of leakage. To perform audible leak detection, specialized electronic listening equipment is used to detect the sounds associated with distribution system leakage. This process allows the agency to pinpoint the location of suspected leaks.

Performance of a system-wide water audit is complicated by the fact that the City is not completely metered. Therefore, it is difficult to separate “authorized” water use (e.g.,

unmetered residential water use) from “unauthorized” usage or distribution system leakage. Water losses due to pipe leakage are believed to be minimal.

The City spends at least $150,000 per year replacing outdated, undersized, and leaking water mains in the distribution system. The City’s capital improvement program provides funding for major water main replacement and installation of approximately one mile every three years. The City has not yet conducted a formal water audit and leak detection program at this time.

However, the City has recently implemented an automated meter reading (AMR) retrofit for its existing metered connections. The new AMR system allows City staff to identify water users with high consumption rates, as well as customers with consumption rates that remain relatively constant throughout the day and night, which indicates that the customer may have a leak. The City has begun to identify these potential leak locations, and has advised appropriate customers of the possibility of leaks.

Additionally, the City Municipal Code includes guidelines and penalties to encourage customers to repair leaks. If the customer does not repair a leak within the ten-day period, the portion of the excess water usage that results from the leakage will be billed at two times the standard water rate until the leak is repaired.

6.3.1 Implementation Status

Although the City has taken certain proactive steps in regard to system leak detection, this DMM has not been fully implemented.

6.3.2 Cost/Benefit Analysis

The City is not currently implementing this DMM. An economic analysis of the cost effectiveness of this DMM is provided in Appendix L. A summary of the cost benefit analysis of this DMM is provided in Table 6.2.

Table 6.2 Cost Benefit Analysis - DMM 3
2010 Urban Water Management Plan
City of Hanford

Cost Effectiveness Summary	
Total Costs	$285,000
Total Benefits	$297,000
Benefit/Cost Ratio	**1.04**

As shown on Table 6.2, the benefit to cost ratio of this DMM is roughly equal to one, which indicates that it may be cost justified for the City to consider implementation of this DMM. This would help the City reduce leakage in the distribution system (thereby reducing the amount of groundwater required to be pumped), and could potentially result in a net cost

savings for the City. The City may consider full implementation of this DMM in the future, if needed.

6.3.3 Economic/Non-Economic Factors

There are several factors that should be considered in the evaluation of this DMM. Reducing or eliminating distribution system leaks through a formal water audit and leak detection/repair program is desirable in that it reduces the amount of water pumped by the City from the groundwater aquifer, which is in a state of overdraft. Additionally, reductions in distribution system leakage or other unauthorized uses could potential help the City meet its 2020 per capita water use target.

Implementation of this DMM would require the City to allocate staff, time, and resources to perform system audits and leak detection, or to utilize an outside consultant to perform these tasks.

6.3.4 Legal Authority

The City is responsible for the operations and maintenance of the water supply and distribution system facilities within its service area. For this reason, the City has the legal authority to conduct system water audits and to perform leak detection and repair activities within the distribution system. Additionally, the City's Municipal Code provides the legal authority to require that customer leaks be resolved.

The City is the sole agency that would be responsible for implementing this DMM within its service area and therefore cannot share implementation costs associated with this DMM with other agencies.

6.3.5 Planned Water Supply

The City does not plan to implement any water supply projects that would provide water at a higher unit cost than was accounted for in the cost benefit analysis summarized in Table 6.2.

6.4 DMM 4 - METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS

This DMM requires water meters for all new constructions and billing by volume of use, as well as establishing a program for retrofitting any existing unmetered connections.

Since 1976, all new water service connections have been required to have water meters. Prior to 1976, single-family homes and duplex dwellings were charged according to a flat rate. Currently, all commercial, industrial, or multi-family dwellings are metered. Installation of 2,800 water meters on single-family homes was completed in 1997. All swimming pool

installations require a water meter be installed. Any addition to an existing home valued in excess of $5,000 requires that the owner pay for installation of a water meter.

Table 6.3 summarizes the number of retrofit water meters installed from 2001 through 2010. State Assembly Bill No. 2572 requires that urban water suppliers be completely metered by year 2025[1]. In 2010, the City had 2,518 unmetered connections[2]. Based on this requirement, the City would need to convert roughly 170 unmetered connections to metered connections each year on average from 2011 to 2025. In order to become completely metered by year 2020, the City would need to convert roughly 250 unmetered connections to metered connections each year on average from 2011 to 2020. This would further aid the City in meeting its 2020 per capita water use target.

Table 6.3 Historical Water Meter Retrofits
2010 Urban Water Management Plan
City of Hanford

Year	Number of Unmetered Connections	Number of Retrofit Meters Installed
2001	3,410	25
2002	3,389	12
2003	3,281	63
2004	2,849	161
2005	2,683	73
2006	2,620	n/a
2007	2,593	n/a
2008	2,551	n/a
2009	2,539	n/a
2010	2,518	n/a

Water meters are read every month, and consumers are billed monthly at a rate per 100 cubic feet (cu. ft.) of water consumed. All non-metered residential customers are billed a flat rate per gross square foot of lot area.

6.4.1 Implementation Status

The status of this DMM is ongoing for existing metered customers and planned in respect to unmetered customers.

6.4.2 Steps Necessary to Implement

This section is not applicable for DMMs that have been implemented.

[1] Assembly Bill 514 requires that agencies receiving USBR Central Valley Project (CVP) water supplies be 100 percent metered by 2013. This requirement, however, does not apply to the City.
[2] Source: City of Hanford 2010 Department of Water Resources (DWR) Public Water System Statistics (PWSS) sheet.

6.4.3 Methods to Evaluate Program Effectiveness

The City has not established a method to evaluate the effectiveness of this DMM.

6.4.4 Conservation Savings

The City has not historically tracked actual water savings associated with the implementation of this DMM, as it is difficult to quantify the water use from a given customer before a water meter is installed. Therefore, estimates of existing conservation savings related to this DMM are not available.

6.5 DMM 5 - LARGE LANDSCAPE CONSERVATION PROGRAMS AND INCENTIVES

This DMM calls for agencies to commence assigning reference evapotranspiration (ETo) based water budgets to accounts with dedicated irrigation meters and provide water-use large landscape water audits to commercial, industrial, and institutional (CII) customers with mixed-use meters.

The City has adopted a Water Efficient Landscape Ordinance (Appendix M) in accordance with Assembly Bill 325: The Water Conservation in Landscaping Act. This ordinance limits the amount of turf in landscaping, requires plant groupings according to water needs, and provides some flexibility to the landscape designer while promoting landscape water efficiency. The Parks Superintendent reviews all commercial landscaping plans for compliance prior to permits being issued. The City will assist with setting irrigation controller clocks for water efficiency landscape watering.

In 2010, the City had 202 landscape accounts and 1,150 CII accounts[2]. There are currently no accounts with specific water budgets; however the Water Efficient Landscape Ordinance establishes a method to ensure that water use does not exceed allowable levels. The approach is to break up landscape areas by “zones” which have similar water use requirements, either none, low, medium, or high. Each zone has a water use multiplier that varies depending on water use, which is multiplied by the square footage of that zone. The sum of these calculations must not exceed the total landscaped area of the project.

To ensure that the intent of these regulations is carried out, the applicant for a building permit is required to submit to the City, landscape plans for review by the City.

After the approved landscape is installed, it is the responsibility of the Public Works Department to inspect the project to confirm that the landscaping for the project was installed in accordance with the approved plans. The landscape designer shall certify that the project is in compliance with these regulations by signing and submitting a completed certificate of compliance. The Director of Public Works, or designated representative, may authorize the deferral of landscape completion for good and valid reasons subject to the posting of appropriate security with the City.

6.5.1 Implementation Status

The implementation status of this DMM is ongoing with respect to water use requirements for large landscapes within the City.

The City has not implemented a large landscape audit program.

6.5.2 Steps Necessary to Implement

Some of the required steps for the City to implement a large landscape survey program include:

- Establish a survey protocol;
- Determine the type and method of storing data associated with each water survey for later evaluation;
- Train City Staff on how to perform the survey;
- Inform large landscape users of the availability of the survey (through bill inserts, the City's website, and other means);
- Dedicate City Staff time and resources for the implementation of the surveys;
- Store and analyze water savings and cost data associated with the program.

The implementation steps for a large landscape survey program are similar to those required for DMM 1. Therefore, the large landscape survey program could be implemented in a manner similar to DMM 1.

6.5.3 Methods to Evaluate Program Effectiveness

The City has not established a method to evaluate the effectiveness of the water use requirements for large landscapes. The City could track the effectiveness of a large landscape water survey program in a manner similar to the one established for DMM 1.

6.5.4 Conservation Savings

The City has not historically tracked actual water savings associated with the water use requirements for large landscapes. Therefore, estimates of existing conservation savings related are not available. Conservation savings associated with large landscape surveys could be determined by comparing pre and post survey water use for metered connections.

6.6 DMM 6 - HIGH-EFFICIENCY WASHING MACHINE REBATE PROGRAM

This program generally provides a financial incentive (rebate offer) to qualifying customers who install a high efficiency washing machine in their home. Other regional municipalities that performed an economic analysis on this program concluded that it would have a low benefit-to-cost ratio.

6.6.1 Implementation Status

This program is not currently implemented in the City, and the City does not plan to implement it in the future.

6.6.2 Cost Benefit Analysis

The City is not currently implementing this DMM. An economic analysis of the cost effectiveness of this DMM is provided in Appendix L. A summary of the cost benefit analysis of this DMM is provided in Table 6.4. Details regarding the cost of water and calculated water savings associated with this DMM are included in Appendix L.

Table 6.4 Cost Benefit Analysis - DMM 6
2010 Urban Water Management Plan
City of Hanford

Cost Effectiveness Summary	
Total Costs	$52,000
Total Benefits	$6,444
Benefit/Cost Ratio	**0.12**

6.6.3 Economic/Non-Economic Factors

There are certain advantages that could be realized by offering high efficiency washing machine rebates to City residents, including a reduction in the amount of groundwater pumped by the City and a reduction in the amount of electricity used by City residents. However, implementation of this DMM would require staff time and resources be allocated to a program that would likely provide little benefit to the City on a cost basis.

6.6.4 Legal Authority

This DMM is simply a rebate program that could be implemented by the City. The City has the legal authority to implement this DMM; however, it has chosen not to.

Southern California Edison currently provides rebates for customers who purchase an Energy Star rated washing machine. The City is the sole agency that would be responsible for providing high efficiency washing machine rebates within its service area, however, and would not share implementation costs associated with this DMM with other agencies.

6.6.5 Planned Water Supply

The City does not plan to implement any water supply projects that would provide water at a higher unit cost than was accounted for in the cost benefit analysis summarized in Table 6.4.

6.7 DMM 7 - PUBLIC INFORMATION PROGRAMS

This program consists of distributing information to the public through a variety of methods including brochures, radio and television, school presentations and videos, and web sites.

The City has embarked on numerous public information programs. The City participates in the Kings County Water Education Committee. Members of the committee make public presentations at local schools throughout the County. The City also participates in the Water Awareness Week campaign. Water-saving reminders are published in the local paper. Water-saving information, water saving tips, and outdoor water use restrictions are distributed periodically in the monthly bill stuffers. Water Conservation tips and regulations are posted on the City's internet web site[3].

6.7.1 Implementation Status

The City has implemented this DMM.

6.7.2 Steps Necessary to Implement

This section is not applicable for DMMs that have been implemented.

6.7.3 Methods to Evaluate Program Effectiveness

The City has not established a method to evaluate the effectiveness of this DMM.

6.7.4 Conservation Savings

The City has not historically tracked actual water savings associated with the implementation of this DMM, as these savings are difficult to accurately quantify. Therefore, estimates of existing conservation savings related to this DMM are not available.

6.8 DMM 8 - SCHOOL EDUCATION PROGRAM

This DMM requires water supplier to implement a school education program that includes providing educational materials and instructional assistance.

Since 1986, the City has been displaying an informational booth at the Kings District Fair and at the Annual Street Party Water Saver kits have been distributed that on contain low-flow plumbing fixtures, toilet dam, dye tablets and water saving tips. The City is a member

[3] http://www.ci.hanford.ca.us/depts/pw/utilities/conservation.asp

of the Kings County Water Education Committee (KCWEC). Representatives of the KCWEC go to the public schools and make presentations on water safety and water conservation[4]. Book covers that provide water conservation and water safety information are purchased and distributed to local schools.

6.8.1 Implementation Status

The City has implemented this DMM.

6.8.2 Steps Necessary to Implement

This section is not applicable for DMMs that have been implemented.

6.8.3 Methods to Evaluate Program Effectiveness

The City has not established a method to evaluate the effectiveness of this DMM.

6.8.4 Conservation Savings

The City has not historically tracked actual water savings associated with the implementation of this DMM, as these savings are difficult to accurately quantify. Therefore, estimates of existing conservation savings related to this DMM are not available.

6.9 DMM 9 - CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL ACCOUNTS

This program typically consists of ULFT replacement in CII facilities and either surveys of water use for CII accounts or performance targets for CII accounts. Additional CII related conservation programs may involve turf fields, smart irrigation timers, and industrial process water use reductions.

The City does not currently have a program for CII accounts. These accounts are currently metered and charged in accordance with the quantity of used water.

6.9.1 Implementation Status

This program is not currently implemented in the City, and the City does not plan to implement it in the future.

6.9.2 Cost Benefit Analysis

The City is not currently implementing this DMM. An economic analysis of the cost effectiveness of this DMM is provided in Appendix L. A summary of the cost benefit analysis of this DMM is provided in Table 6.5. Details regarding the cost of water and calculated water savings associated with this DMM are included in Appendix L.

[4] It is not known whether the material presented meets state educational framework requirements.

Table 6.5 Cost Benefit Analysis - DMM 9 2010 Urban Water Management Plan City of Hanford	
Cost Effectiveness Summary	
Total Costs	$62,000
Total Benefits	$49,661
Benefit/Cost Ratio	**0.80**

6.9.3 Economic/Non-Economic Factors

Implementation of this DMM is desirable in that it could reduce the amount of water pumped by the City from the groundwater aquifer, which is currently in a state of overdraft. However, implementation of this DMM could cause tension between the City and its commercial and industrial customers.

6.9.4 Legal Authority

Implementation of this DMM could be through voluntary compliance or mandatory compliance by CII customers. For this reason, the City should have the legal authority to implement a voluntary compliance program for CII customers. Should the City choose to implement this DMM, it is recommended that the City examine whether or not it has the legal authority to implement a mandatory compliance program (if desired).

The City is the sole agency that would be responsible for implementing this DMM within its service area and therefore cannot share implementation costs associated with this DMM with other agencies.

6.9.5 Planned Water Supply

The City does not plan to implement any water supply projects that would provide water at a higher unit cost than was accounted for in the cost benefit analysis summarized in Table 6.5.

6.10 DMM 10 - WHOLESALE AGENCY PROGRAMS

This DMM applies to wholesale agencies and defines a wholesaler's role in terms of financial, technical, and programmatic assistance to its retail agencies implementing DMMs. The City is not a water wholesaler, therefore this DMM does not apply.

6.11 DMM 11 - CONSERVATION PRICING

Water meters are read every month, and consumers are billed monthly, at a rate per 100 cu. ft. of water consumed. Unmetered water users are charged at a flat rate. There are no seasonal rates and no declining rate structure.

The City also provides sanitary sewer service. The rate structure for sanitary sewer service is flat for residential users, volumetric for commercial and industrial users, and based on average daily attendance for schools.

6.11.1 Implementation Status

The status of this DMM is ongoing with respect to metered customers and planned for unmetered customers.

6.11.2 Steps Necessary to Implement

In order to fully implement this DMM, the City will continue to convert unmetered connections to metered connections.

6.11.3 Methods to Evaluate Program Effectiveness

The City has not established a method to evaluate the effectiveness of this DMM.

6.11.4 Conservation Savings

The City has not historically tracked actual water savings associated with the implementation of this DMM, as these savings are difficult to accurately quantify. Specifically, it is difficult to measure the water use of a customer before it has become metered. Therefore, estimates of existing conservation savings related to this DMM are not available.

6.12 DMM 12 - WATER CONSERVATION COORDINATOR

The Utilities Superintendent and Parks Superintendent are responsible for coordinating and expanding the City's water conservation program and providing residents with useful water conservation information. The Utilities Superintendent coordinates conservation activities related to the water distribution system. The Parks Superintendent is responsible for coordinating water conservation measures related to parks and other large landscapes in the City, primarily related to DMM 5.

6.12.1 Implementation Status

The City has implemented this DMM.

6.12.2 Steps Necessary to Implement

This section is not applicable for DMMs that have been implemented.

6.12.3 Methods to Evaluate Program Effectiveness

The City has not established a method to evaluate the effectiveness of this DMM.

6.12.4 Conservation Savings

The City has not historically tracked actual water savings associated with the implementation of this DMM, because these savings cannot be accurately quantified. Therefore, estimates of existing conservation savings related to this DMM are not available.

6.13 DMM 13 - WATER WASTE PROHIBITION

In 1976, the City added a Water Waste Ordinance (Appendix N). The City then started requiring all new connections to have a water meter. Citations were issued for water violations. If a consumer received three citations, they were penalized $5.00. When they received their fourth citation, a water meter was installed, with all the costs borne by the consumer. The ordinance was revised in 1986 increasing the first penalty to $15.00, and each subsequent penalty was increased by $10.00 until a water meter would be required. If waste of water should continue, a flow restrictor is installed. If the customer continues to waste water, the meter and service are turned off and locked. When this happens, the offending consumer is required to pay all costs prior to having the water turned back on.

According to the City's Municipal Code Section 13.04.150 Water Use Unlawful Acts, in the use of water supplied by the City no person shall:

- Sprinkle, irrigate, or otherwise apply water to any yard, ground, premises, or vegetation except on the following designated days: Properties with even-numbered addresses, Tuesday, Thursday, and Saturday. Properties with odd-numbered address, Wednesday, Friday, and Sunday; or
- Sprinkle, irrigate, or otherwise apply water to any yard, ground premises or vegetation or wash any type of vehicle, boat or trailer on Monday; or Sprinkle, irrigate or otherwise apply water to any yard ground, premises or vegetation on any day of the week between the hours of ten a.m. and six p.m. during periods designated as "daylight savings time" (generally occurring between April 15th and October 15th): or
- Sprinkle, irrigate, or otherwise apply water to any yard, ground, premises or vegetation except by the use of a hand held hose, a sprinkler device or an approved sprinkler system; or
- Keep, maintain, operate, or use any water connection, hose, faucet, hydrant, pipe, outlet or plumbing fixture which is not tight and free from leakage or dripping; or
- Sprinkle, irrigate, or otherwise apply water to any yard, ground, premises or vegetation between the hours of twelve midnight and five a.m. unless the water device used to apply such water is controlled by an automatic shut-off device or a person is in immediate attention of the watering device; or
- Allow excessive water to run or waste from his property on to sidewalks, streets or adjoining or adjacent property; or

- Use water for sidewalk, driveway or walkway washing or cleaning, except that a business may apply water to paved areas of the business premises in order to maintain the same in a clear and sanitary condition; or
- Willfully or negligently, waste water in any manner.

Any person using water from the City water system in violation of any provision of the City Municipal Code shall pay, upon demand by the City, a penalty charge in an amount, which shall be determined by City Council Resolution.

6.13.1 Implementation Status

The City has implemented this DMM and will continue to enforce the water waste ordinance in the future.

6.13.2 Steps Necessary to Implement

This section is not applicable for DMMs that have been implemented.

6.13.3 Methods to Evaluate Program Effectiveness

The City has not currently established a method to evaluate the effectiveness of this DMM.

6.13.4 Conservation Savings

The City has not historically tracked actual water savings associated with the implementation of this DMM. Therefore, estimates of existing conservation savings related to this DMM are not available.

6.14 DMM 14 - RESIDENTIAL ULTRA-LOW-FLUSH TOILET REPLACEMENT PROGRAMS

State legislation requires the installation of efficient plumbing in new construction, and effective 1994 requires that only ULFT be sold in California. Subsequently, homes constructed since 1994 in the City have ULFT. The City does not currently have a plan to implement a Rebate Incentive Program for replacements on homes built prior to 1994.

6.14.1 Implementation Status

This program is not currently implemented in the City.

6.14.2 Cost Benefit Analysis

The City is not currently implementing this DMM. An economic analysis of the cost effectiveness of this DMM is provided in Appendix L. A summary of the cost benefit analysis of this DMM is provided in Table 6.6. Details regarding the cost of water and calculated water savings associated with this DMM are included in Appendix L.

Table 6.6 Cost Benefit Analysis - DMM 14 2010 Urban Water Management Plan City of Hanford	
Cost Effectiveness Summary	
Total Costs	$36,000
Total Benefits	$11,588
Benefit/Cost Ratio	**0.32**

6.14.3 Economic/Non-Economic Factors

There are certain advantages that could be realized by offering ULFT rebates to City residents, including a reduction in the amount of groundwater pumped by the City and a reduction in the amount of wastewater entering the sewer collection system. However, implementation of this DMM would require staff time and resources be allocated to a program that would likely provide little benefit to the City on a cost basis.

6.14.4 Legal Authority

This DMM would likely be implemented as an optional rebate type program by the City. The City would likely have the legal authority to implement this DMM; however, it has chosen not to.

6.14.5 Planned Water Supply

The City does not plan to implement any water supply projects that would provide water at a higher unit cost than was accounted for in the cost benefit analysis summarized in Table 6.6.